P407

Combinatorial Interaction between AtbZIP44 and Other bZIP Transcription Factors in the Regulation of *Arabidopsis thaliana* Seed Maturation and Germination

Raquel Iglesias-Fernández, Victoria Llanos-Casado, Pilar Carbonero
Centro de Biotecnología y Genómica de Plantas (Universidad Politécnica de Madrid), Pozuelo de Alarcón (Madrid), Spain

During the seed maturation phase, seed storage proteins (SSPs) and lipids are deposited in the embryo of *Arabidopsis thaliana*, and these will be hydrolysed to be used as energy, C- and N- sources, for the seedling until photosynthesis is fully established. Upon seed imbibition, the dismantling of the endosperm cell walls (CWs) that are rich in mannan polymers, by endo-β-mannanases (MAN; EC. 3.2.1.78) and other hydrolytic enzymes are crucial for allowing germination *sensu stricto* to occur.

The transcriptional combinatorial network through which AtbZIP44 regulates gene expression during the two phases of seed development (maturation and germination) has been explored in the yeast 2-hybrid system, using as a bait bZIP44 and as a prey, an arrayed yeast library of *circa* 1,200 Transcription Factor Open Reading Frames (TF ORFs) from *Arabidopsis thaliana* (Castrillo *et al*., 2011). The interaction between AtbZIP44 (S1-group) and other TFs of the C-group (AtbZIP9, AtbZIP10, AtbZIP25; Jakoby *et al*., 2002) has been further established, and its physiological significance investigated by molecular techniques such as RT-qPCR analyses of putative regulated genes (*2SAlb*, *Cru3*, in the maturation phase; *AtMAN7* upon germination; Iglesias-Fernández *et al*., 2013), transient trans-activation assays in tobacco leaves, mRNA Fluorescence *in situ* Hybridization (FISH) experiments, and by the analysis of seed maturation parameters and the germination kinetics of both over-expressor (oex) lines and T-DNA insertion mutants in the selected TF genes.

Castrillo *et al.* (2011) *PLos One* **6**:e21524.

Iglesias-Fernández *et al.* (2013) *Plant J.* **74**: 767-780.

Jakoby *et al*. (2002) *Trends Plant Sci*. **7**: 106-111.